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ABSTRACT

This study investigated the metacognitive knowledge, especially declarative and procedural knowledge, of Taiwanese university students who majored in English and were considered skilled writers. Researchers examined their metacognitive processes and writing strategies using introspective interviews that highlighted the following: their experiences in writing English composition, what they knew about English composition, how they wrote a paragraph in English, what they did when assigned a topic to write about in English, what they did when they ran out of ideas while composing, and what they did after they finished writing a composition. Before the interviews, participants wrote an English composition on a topic presented to them by the researcher. The study examined five types of declarative knowledge and the procedural knowledge for planning and revising based on analysis of interview transcriptions. The students possessed the metacognitive knowledge and strategies needed to write well. First, they underwent a recursive writing process. They were metacognitively aware of the declarative knowledge of topic familiarity, self-awareness of strength or weakness, rhetoric conventions, coherence and continuity, audience awareness, and many others. They were capable of making good use of their metacognitive procedural knowledge (brainstorming, organizing, outlining, pausing-to-think, reviewing, and revising) to fulfill the requirements of good writing. (Contains 19 references.) (SM)

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Investigating the Metacognitive Awareness and Strategies of English-majored University Student Writers[1]

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This study investigates the metacognitive knowledge, especially the declarative and procedural knowledge, of the English-majored university students who are deemed as skilled writers. It is, thus, a step further toward the goal of developing the metacognitive knowledge base needed in EFL writing. Not until the early 1990s have the researchers started promoting to integrate the findings of the metacognitive theory, which have long been applied to facilitate learning in both L1 and L2 reading, into EFL writing instruction (e.g., Devine, 1993; Kasper, 1997; Sitko, 1998; You & Joe, 1999, 2000). The research of metacognition in writing shows that unskilled writers, compared to skilled writers, possess more limited metacognitive knowledge and do relatively less monitoring of their own cognitive activities. This study, accordingly, intends to examine the skilled writers' metacognitive processes and strategies of writing by means of introspective interview in order to find out what the metacognitive knowledge is with which unskilled writers need to be equipped in order to write well. In this paper, we discuss five types of declarative knowledge and the procedural knowledge for planning and revising based on the analysis of interview transcriptions. The findings form the rudimentary metacognitive knowledge base for EFL writing and further suggest that EFL writing instruction should be designed to strengthen students' metacognitive models.

INTRODUCTION

When Flavell (1979) explicates the notion of metacognition, he points out that "[i]nvestigators have recently concluded that metacognition plays an important role in . . . reading comprehension, writing, [and] language acquisition . . ." (p. 906). However, for two decades, research and application of the notion in language learning has focused on reading, including L2 reading. The research shows that students' performance improves when their metacognitive knowledge increases, and yields fruitful insights into learners' conceptions of task demands, and awareness of their own level of reading comprehension and strategy monitoring. Not until the early 1990s have researchers started to promote applying the metacognitive theory to both L1 and L2 writing given that writing as well as reading are complicated cognitive enterprises that both involve the process of meaning discovery.

Devine's (1993) study is among the first few attempts on integrating metacognition into writing. She claims that the two major trends in the current writing research and instruction, i.e. the textual approach and the process approach, instead of being in opposition, actually have differing emphases from a metacognitive perspective. In terms of Flavell categorization of metacognitive knowledge, the process approach emphasizes knowledge of strategy whereas the textual approach focuses on knowledge of task. Notwithstanding the differences between the two major approaches, the notion of metacognition can thus bridge the gap, and assist both researchers and instructors to better understand the cognitive processes writers undergo, the writing strategies they employ, and the monitoring and compensatory skills they develop when they write.

Metacognition is the knowledge and regulation about cognitive phenomena. The research of metacognition indicates that metacognitively aware learners are more strategic and perform better than unaware learners. One explanation, as claimed by Schraw and

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Dennison (1994), is that "metacognitive awareness allows individuals to plan, sequence, and monitor their learning in a way that directly improves performance" (p. 460). Concerning EFL and ESL writing, Victori (1999) reports that the less successful EFL writers' metacognitive knowledge is more limited and inadequate compared with the successful writers. After finding the positive correlation between metacognition and ESL writing performance, and the metacognitive growth of the ESL student writers, Kasper (1998) suggests that ESL writing instruction should be designed to strengthen students' metacognitive models. You and Joe's (1999, 2000) studies, thus, attempt to emphasize the important role of metacognition in EFL writing instruction in Taiwan by examining how the research of the textual and process approaches is related to the notion (cf. 1999), and by suggesting metacognitive instruction methods (cf. 2000).

The current study is a further attempt on integrating metacognition into EFL writing based on You and Joe's previous studies. The goal is to find out what metacognitive knowledge that skilled writers possess but with which unskilled writers need to be equipped. The research of metacognition indicates that unskilled writers possess more limited metacognitive knowledge, compared to skilled writers, and do relatively less monitoring of their own cognitive enterprises. This study thus intends to find out what there might be for beginning or unskilled writers to learn by investigating the composing processes and analyzing the writing strategies of the skilled writers who are English-majored college students by means of introspective interview. That is, we aim to approximate the answer to the question what the knowledge and behavior are that skilled writers possess and perform, which constitute the development target for EFL writing instructors and beginning writers, and toward which unskilled writers can actually progress. Moreover, this study is meant to be a step further toward the ultimate goal of developing the metacognitive knowledge base that EFL students need in order to write well in the target language.

THE FRAMEWORK OF METACOGNITION

Flavell's View of Metacognition

Flavell (1979, 1981, 1987), one of the most salient researchers in the study of metacognition, discusses the notion of metacognition by classifying the domain into two concepts: *metacognitive knowledge* and *metacognitive experience*. "Metacognitive knowledge refers to the part of one's acquired world knowledge that has to do with cognitive matters" (Flavell, 1987, p. 21); it is subdivided, according to Flavell, into three categories: knowledge of *person* variables, *task* variables, and *strategy* variables. Knowledge of person variables refers to "the kind of acquired knowledge and beliefs that concern what human beings are like as cognitive organisms" (1987, p. 22). Examples might be a person's beliefs that he or she can write narratives better than argumentatives, and that his or her prewriting stage, planning, takes longer time than his or her classmates. Knowledge of task variables concerns the information available to an individual during a cognitive enterprise and includes metacognitive knowledge about task demands or goals (cf. Flavell, 1979). When writing is concerned, this category of knowledge includes how much an individual knows about the topic he or she will write about, whether the collected material is trustworthy, who the target audience is, etc. Knowledge of strategy variables concerns "what strategies are likely to be effective in achieving what subgoals and goals in what sorts of cognitive undertakings" (Flavell, 1979, p. 907). An example in writing might be that a writer reads his or her own written product as a reader to ascertain the text is coherent. The other concept in the taxonomy is metacognitive experiences, which are "conscious experiences that are cognitive and affective" (Flavell, 1987, p. 24). For example, an individual is having a metacognitive experience when he or she has the feeling that he or she is far from achieving the goal of an

assigned written task. Flavell emphasizes the importance of metacognitive experience in everyday cognitive lives, and he claims that as we grow older we learn how to interpret and respond appropriately to these experiences.

The Two Components of Metacognition

In the above paragraph, Flavell's view of metacognition has been summarized. Nevertheless, as claimed by Schraw (2001), most researchers make a distinction between two components of metacognition, *knowledge of cognition* and *regulation of cognition*. Knowledge of cognition refers to "what individuals know about their own cognition or about cognition in general" (Schraw, 2001, p. 4). It can be further divided into three kinds of metacognitive awareness: *declarative*, *procedural* and *conditional* knowledge (e.g., Brown, 1987; Jacobs & Paris, 1987; Schraw, 2001; Schraw & Moshman, 1995). According to Schraw (2001), declarative knowledge "includes knowledge about oneself as a learner and about what factors influence one's performance" (p. 4). For example, a student might know that topic familiarity and prior knowledge influence content quality of written products or that the target language has different rhetoric conventions from those of his or her native language. Procedural knowledge refers to knowledge about doing things. For example, a student knows *how* to make an outline before starting to compose, *how* to make a written text easier for the readers to follow, or *how* to determine whether his or her writing is coherent. Schraw and Moshman (1995) reports that individuals with a high degree of procedural knowledge are more likely to use strategies automatically and effectively, and that helping younger students increase their procedural knowledge can improve their problem-solving performance. Conditional knowledge refers to knowing *why* a given strategy is adopted or *when* to use one strategy as opposed to another. Conditional knowledge is important because it helps students select different strategies most proper for each task situation in an effort to better regulate their learning. To sum up, declarative knowledge refers to knowing "what" are the things; procedural knowledge refers to knowing "how" to do things; conditional knowledge refers to knowing "why" and "when" the strategies or procedures are appropriate.

Regulation of cognition refers to "a set of activities that help students control their learning" (Schraw, 2001, p. 4); a number of regulatory skills have been described and discussed in the literature (e.g., Brown, 1987; Baker & Brown, 1984; Jacob & Paris, 1987; Schraw, 2001; Schraw & Dennison, 1994), including planning, monitoring, evaluation, regulation, etc. We shall not discuss regulation of cognition any further here in this paper for the current study concerns mainly knowledge of cognition, the first essential component of metacognition, for the time being.

METHOD

Subject

The nine EFL skilled writers interviewed in the current study were the English-majored university students who were recommended by their English composition instructors as the top 5% proficient writers in the departments. The subjects were either juniors or seniors in the universities and universities of science and technology located at the central and southern Taiwan; among them, only one subject is male. Two of the subjects had the experience of studying at the language schools in the United States, one had traveled in the United States for one month, and the others reported no experience of studying English abroad.

Data Collection

Interview. The current study adopts introspective interview to investigate the subjects' writing processes and strategies for two reasons. First, the research of writers' metacognitive awareness is still at its embryonic stage, and there do not exist enough research findings to design assessment tools without the risk of interference of researcher's presumptions.

Second, the studies of EFL writers' composing processes in Taiwan have mostly adopted the think-aloud protocols; this study therefore intends to collect the data of writers' composing processes by means of introspective interview.

Jacob and Paris (1987) summarize eight criticisms of verbal interview, some of which are given as follows:

- Verbal report data may include participants' rationalization, elicited mimicry, and fabrications because of the demand characteristics of the situation
- The behavior and characteristics of the interviewer can elicit answers perceived to be socially desirable.
- Reliability of interviews is rarely assessed.
- Forgetting may interfere with introspective interview.
- Asking questions during or after cognitive processing can disrupt thinking. (p. 264)

However, they believe that verbal interviews are indispensable for the reported knowledge of subjects collected in interview studies provides the rudimentary data for further metacognitive research. For example, after 20 years' studies, researchers such as Jacob and Paris (1987), and Schraw and Dennison (1994) can then develop the metacognitive awareness inventories to assess individuals' metacognitive knowledge and regulation of reading. Since the research of metacognition in L1 and L2 writing has not yet well developed, we have not known writers' writing processes and strategies well enough to develop an objective assessment tool.

In addition to introspective interview, "think-aloud" method is often adopted. In Taiwan the researchers in the line of the process approach usually employ the think-aloud protocols to observe writers' composing processes (e.g., Liu, 1999; Tseng et al, 1989). This study thus adopts introspective interview to collect the data. One of the main reasons is that we would like to examine writers' writing processes and strategies by a different approach given that neither introspective interview nor "think-aloud" method can reveal the thorough mental processes during human cognitive activities.

The interviews were conducted in Mandarin; the questions, which were directed to the subjects in Mandarin, are translated into English as follows:

(1) What is your learning experience of writing English compositions?
(2) What do you know about composing in English?
(3) How do you write a paragraph in English?
(4) How do you write an article in English?
(5) What do you usually do when you are assigned a topic to write about in English? Why?
(6) What do you usually do when you are running out of ideas while composing? Why?
(7) What do you usually do after you finish writing a composition or before you hand it in to the instructor? Why?

Notice that such questions as "Do you prepare an outline first before you write?" or "Do you begin each paragraph with a topic sentence?" or "Do you check spelling and grammar after you finish writing?" were avoided in the interviews. We did not include the questions of this type because open-ended questions are more likely than yes-no questions to encourage the subjects to report what they usually do when composing, and because we would like to eliminate the interference of researchers' preferences and presumptions as much as possible.

Writing Task. Before the interview, each subject was asked to write an English composition. The topic shown on the papers prepared for them to write on is as follows: *People attend colleges or universities for many different reasons. Why do you think people attend colleges? Use specific reasons and examples to support your answer*. They were given one hour to finish the writing task, and no reference books were allowed. This writing task was designed to help the student subjects answer the questions later in the interview. Afterwards examining the transcriptions shows that the interviewer and the subjects both referred to the writing task often as examples during the interview as we expected.

Procedure. Each subject was interviewed on the campus of the university that she or he attended. When the researcher first met the subject students, we greeted them and explained to them the purpose of the interview. Then the subjects were provided papers with the assigned topic printed on. They were told to read through the topic and raise questions if they were not clear about the topic. After the researchers assured that the subjects were ready to write, they were left alone to compose the task for one hour. The written texts were collected after they were done or when the time was up; all the subjects managed to get the writing task done in time. They were then given ten minutes to take a rest while the interviewer was reviewing their written works. We interviewed one student at a time; the interview started when both the interviewer and the subject were ready. During the interview, one researcher carried on the conversation with the interviewee, and another researcher was also present to take notes of the interview.

RESULTS AND DISCUSSIONS

For the convenience of discussion and because of page limit, we combine the results and discussions in this section. In the following, we will first analyze the writing processes of the subjects. Then we will examine their metacognitive awareness of writing with special regard to declarative and procedural knowledge. Namely, we will focus on *what* they know about composing in English and *how* they compose in English. The questions *when* and *why* they use a given strategy, i.e., the conditional knowledge, are beyond the scope of this study; we suggest they shall be investigated in the future research. In addition, we would like to refer our interested readers to You and Joe (2001) for detailed report of the entire project for we will only discuss some of the findings below because of limited space.

Recursive Writing Process

Writing process is generally divided into three stages: prewriting, writing, and reviewing. The Flower and Hayes (1981) writing process model, one of the two most widely-accepted and influential cognitive models of writing process, sequences the process into the following stages: planning, translating, and reviewing. Based on the model, the first stage of writing is the *planning* process, which involves a number of subprocesses, i.e., generating ideas, organizing, and goal-setting. Moreover, the factor of task environment is identified by writer in the process of goal-setting; a writer needs to define the *rhetoric problem*, which includes the rhetorical situation, audience, and the writer's own goals in writing. The next stage is *translating*, the process of putting ideas into visible linguistic symbols, i.e. words. The final stage is *reviewing*, which consists of two subprocesses, *evaluating* and *revising*. Notwithstanding dividing the entire process into three stages, Flower and Hayes emphasize that the three processes are recursive, as supported by numerous studies later (e.g., Silva, 1990; Zamel, 1983). For example, reviewing frequently lead to new cycles of planning and translating; namely, any given process can be embedded within any other. When designing the interview questions, we actually arranged the questions in the order of planning, writing, and reviewing. Believing that writing is a non-linear and recursive generating process, we, therefore, avoided such terms as planning, outlining, reviewing or revising. The stages were

not indicated explicitly also because the reported knowledge of the interviewees might have been influenced by these clues.

The findings of analyzing the transcriptions of interview are compatible with Flower and Hayes' and others'; that is, writing process can indeed be divided as planning, writing, and reviewing, and the three processes are interactive and recursive during the cognitive process of writing. For example, when questioned what she usually did when running out of ideas during writing, one student subject reported that she would try to write about the topic from another aspect as shown in turn 226[2] in the conversation below. In addition, when she was allowed longer time to compose such as a week, she would then stop writing at that moment but resumed writing one or two days later, as shown in turn 240.

(1)[3]

225T: What will you do if you have no idea about what you're going to write next in the middle of writing?

226S: What will I do? I might, I might write from another aspect.

. . .

239T: But if you don't have to sit right here and write the article in an hour, instead, say you are allowed one week to write the assignment, what will you do if you run out of ideas in the middle of writing?

240S: Then, I will not continue to write any more; I will wait until tomorrow or two days later to write again.

241T: Why will you pause and resume writing later?

242S: I think, leaving the writing task aside for a while gives me a chance not to think about my thoughts for a period. Thus, by giving myself a break and returning to the task later may help me to come up with new or better ideas.

243T: Um hum.

244S: Right! So I won't concentrate on only one idea and get stuck!

245S: What will you usually do if you stop writing in the middle of your writing process and you decide that you want to write again?

246T: I will write down whatever comes to my mind on a piece of paper first. And then after lots of ideas have been written down, I will choose the ideas that I think I can write more about and further develop them.

Notice that in turn 245, the interviewer raised the question, "what do you usually do when you resume writing?" The subject replied in turn 246 that she would write down whatever she could think of first, and then selected some better ideas to further develop them. The answer is of great importance in that what the subject did when she resumed writing is in fact the same with what she usually did at the beginning of a writing task, as she reported earlier in the interview. That is, when she resumed writing, she would *plan* again by means of brainstorming as she usually did at the stage of prewriting. This example, thus, provides supportive evidence to the claim that writing is a recursive process; the subject's answers reveal that the cycle of planning, writing, and reviewing might be repeated again and again during the entire cognitive process of composing. As we will see in the following discussions, this nature of writing process finds supports in many places in the interviews.

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[2] In the transcriptions, the dialogues are numbered for the convenience of reference.

[3] As pointed out above, all the interview were conducted in Mandarin Chinese in order to elicit as much verbal data from the subjects as possible. For readers' convenience, thus, all the examples selected here are translated into English, and the original data in Mandarin is given in the appendix. The examples are therefore numbered in accordance with the order of the original texts in the appendix.

Declarative Knowledge

Following Schraw's (2001) definition, in this study declarative knowledge refers to "knowledge of knowing oneself as a learner and about what factors influence one's performance" (p. 4). This section discusses only some of the declarative knowledge identified in the transcriptions, including *topic familiarity*, *self-awareness of strength or weakness*, *rhetoric convention*, *coherence and continuity*, and *audience awareness*. Please refer to You and Joe (2001) for other declarative knowledge the subjects metacognitively possess.

Topic Familiarity. *Knowledge of knowing that topic familiarity might influence the content of one's written work.* According to Kaplan (1983), one of the four kinds of knowledge an individual needs in order to write is the knowledge of subject. When a learner possesses no or limited amount of knowledge about a topic, insufficient topic familiarity might then be one of the contributing factors to the poor quality of his or her writing performance. For instance, if an English-majored college student is asked to write about such topic as 'How to Stop Global Economy from Falling', it is not very likely, if not impossible, for him or her to compose a good essay given the fact that he or she might not have enough knowledge about the topic at all.

In the transcriptions, the subjects are found to have this declarative knowledge, topic familiarity, as shown by the example below:

(2)

82S: If I am familiar with the topic, the content of article will be more; but on the other hand, if the topic is not so familiar to me, I'll write less.

. . .

96S: In fact, what matters is the amount of material I can gather. If the material I obtain is a lot, I probably can ta, ta, ta write a few paragraphs. But if the amount of material I can get is limited, then I will write only two paragraphs.

Examining the above transcription indicates that the subject was aware of that how much he knew about a topic would determine how much and how well he could write about the topic.

Self-awareness of Strength or Weakness. *A learner's knowledge about his or her strength or weakness in a cognitive task.* Declarative knowledge includes knowledge of knowing oneself as a learner, and being aware of one's own cognitive process is the first step before one can monitor his or her learning and further develop compensatory skills. The analysis of interviews suggests that the skilled writers were aware of their own strength and weakness, and they made good use of their strength and attempted to overcome the weakness, as illustrated by the example given below

(3)

62S: . . . My strength is that I am good at discourse structure, and the weakness is that I possess a limited size of vocabulary.

. . .

66S: . . . afterwards when I write, I tend to focus on the structure of article. I know my vocabulary size is not as large as others'

From the transcription we can learn that the subject knew his own strength and weakness, and he also knew how to take advantage of the strength. He knew it well that he was good at organizing ideas and paragraph structure, so he would make sure that his article was well-organized and easy for the reader to follow despite that the vocabulary he learned was limited.

In fact, all of the nine subjects in this study reported that limited amount of vocabulary was one of their many weak points that needed improvement. In addition, notwithstanding

some individual differences, they shared the view that they could enlarge their vocabulary size by means of extensive reading.

Rhetoric Conventions. *Knowledge of the writing conventions and rhetoric structures that are appropriate in the language one uses to write.* In addition to knowledge of subject, Kaplan (1983) believes that knowledge of writing conventions is also one type of knowledge that a writer needs in order to write. Among the many differences, one of the different writing conventions existing between Chinese and English is that the former has no concept of topic sentence while beginning a paragraph with topic sentence is a preferred writing convention in contemporary American English. As discussed in Grabe and Kaplan (1996) and You (1999), lacking the knowledge of appropriate rhetoric conventions is one of the main reasons for an EFL/ESL writer to be unable to write well.

All the subjects in this study reported that they had acquired such concepts as thesis statement and topic sentence, which are preferred in contemporary American English but new to Taiwanese EFL students, some time during the years when they were learning English. They did not only know about these concepts but adopted them in their writing for they believed these were required as well as appropriate in the target language. The example below is given to illustrate that they possess this declarative knowledge:

(4)

116S: The introductory paragraph provides an introduction to guide the readers before they read the body of an article, and at the end of introductory paragraph, it can have a thesis statement, which lists the three main points I am going to discuss in the rest of article. The three main points are then discussed separately in the following three paragraphs. In each of the three paragraphs, the paragraph will begin with a topic sentence, which summarizes the three examples that will be further elaborated in the paragraph to explain the main idea of the paragraph.

In the above example, the subject was explaining the structure of an English composition. It is obvious that she had a clear mental image of a well-organized English article, and in fact, examining her writing sample shows that she structured her article in accordance with this image.

Coherence and Continuity. *Knowledge of knowing that coherence and continuity are the required elements of a piece of text.* In their landmark work exploring the notion of cohesion, Halliday and Hasan (1976) contend that coherence and continuity are the core elements for a sequence of sentences to be regarded as a piece of text. Johns (1986) and You (1999, 2000) both emphasize the importance of coherence and continuity in writing; the former points out that coherence in written text is such a complex concept that it is hard to teach and to learn.

The analysis of transcriptions reveals that all the subjects in this study were aware of the important role coherence and continuity play in writing. Three examples selected from three interviews with different subjects are given as follows:

(5)

70S: . . . in fact, writing requires coherence; namely, coherence is an essential component of writing. Each individual paragraph should be related to each other instead of being totally independent or irrelevant of each other.

(6)

38S: . . . an article should read like a whole; in other words, the beginning throughout the end of an article should be related. So when you read it, you can understand what the entire piece of article intends to tell you.

(7)

343S: . . . [coherence] is closely related to the notion of main idea. In order to achieve coherence, you need to systematically arrange the paragraphs of an article so as to ensure that the whole article deals only with the main idea without any distraction.

Even though the subjects could not define coherence or continuity clearly, which is in fact a very difficult task as acknowledged by Johns, they were aware of, and able to report and describe the characteristics of the two concepts. In the following section discussing procedural knowledge, we will examine some of the strategies they use to achieve coherence and continuity.

Audience Awareness. *Knowledge of keeping the readers in mind while writing.* Audience awareness is also an essential component in good writing (Kaplan, 1983; Silva, 1990). However, as pointed out by EFL/ESL writing researchers, it is rather difficult for students to become audience aware because students tend to regard the instructor as the only reader in composition classroom. To increase students' awareness of their readers, the methods suggested by researchers and instructors include peer review, peer correction, publication of students' written works, change of intended audience in assigned writing task etc. (cf. Grabe & Kaplan, 1996)

All of the nine subjects in this study are found to possess this type of declarative knowledge. The following examples are selected from the interviews with three different subjects:

(8)

144S: Can the readers understand me? Can they get my intended meaning?

(9)

226S: The purpose for a piece of text to be coherent is to make it easy for the audience to follow. And they can quickly understand what I try to express.

(10)

86S: . . . between one sentence and another, there should be . . ., well, the transition between sentences should be smooth. You know, that a writer understands what he or she writes does not necessarily mean that the readers can understand the text as well.

As we shall see in the next section, this declarative knowledge, i.e. audience awareness, can help the skilled writers to determine whether their writing is coherent.

Procedural Knowledge

Procedural knowledge refers to knowledge about doing things, and as explained by Schraw (2001), it is usually represented as *strategies*. For example, a writer knows *how* to brainstorm, *how* to evaluate, or *how* to revise. As in the previous section, we in fact identify much more strategies than what we shall explicate below (cf. You & Joe, 2001). In the following, the strategies are categorized as strategies for planning and strategies for revising.

Strategies for Planning. In Flower and Hayes' (1981) cognitive model of writing process, the stage of planning involves generating and organizing ideas. The following examples are the answers provided by the subjects when they were questioned what they usually did when they were about to write. In the example, we can find that the skilled writers *planned* for their writing tasks and underwent the subprocesses explained in Flower and Hayes' model.

(11)

96S: [When I am assigned a topic to write,] I will firstly think over what I've already known related to the topic. And then I will arrange the ideas in order to decide

which one should be written first and which one second, you know, how to put them in the best order. And then I will follow the teacher's instructions [to develop each paragraph] including introduction, thesis statement, followed by a brief connection, and then a conclusion.

(12)

106S: When I am generating the ideas, I mean, thinking about what I've already known about the topic, I will simply keep the ideas in mind if they are pretty short, but I will write the ideas down on a piece of paper if they are long.

. . .

110S: I know what I am going to write in the first paragraph, and also the second paragraph.

(13)

50S: When I was planning for the first paragraph, I would think over how to begin a paragraph . . .

52S: After planning for the first paragraph, I mean after I've figured out what I am going write in the first paragraph, I will then think over the ideas that I am going to write in each of the following paragraphs. When I've thought through the ideas, I will then follow the order to develop them one by one, step by step.

54S: Right, after I make the decision on the contents of each paragraph, and arrange their order, I will then start to write.

In the first example, the writer first did brainstorming to generate ideas, then organized the ideas she had come up with, and finally she would form an outline for the contents of each paragraph. On the other hand, in the second example, the writer started the writing process by focusing on the first paragraph, the introduction. She did not mention particularly how she generated ideas, but she certainly made an outline for the entire article before she actually started to write. Other individual differences found in the data include that someone preferred to write down the ideas when they were generating them whereas others reported that they did the process of brainstorming and organizing only in their minds.

Thus, we define *brainstorming* as the actions one performs to generate ideas, *organizing* as the actions of selecting and arranging ideas, and *outlining* as the actions of planning the structure of an article including introduction, body, and conclusion. The methods each individual adopted or the time they spent on each subprocess may vary, but notice that all of the skilled writers underwent the process of planning before they were about to write. Two things need our attention here. First, we have emphasized earlier in this paper that the entire writing process is a recursive one; therefore, the strategies for planning discussed here might be adopted repeatedly during the process of composing. As shown in the example given in the section of recursive writing process above, we in fact find that the subjects would also undergo the process of planning and repeat the strategies when they ran out of ideas in the middle of writing in order to generate new ideas and continue to write. Second, all of the subjects reported that they would go to library or log on to the Internet to gather more material about the subject if they were not familiar with or knew little about the topic. This can also be considered as a strategy to generate ideas.

Strategies for Revising. As reported in the studies of ESL/EFL writers (e.g., Leki, 1992; Raimes, 1985; Zamel, 1983), with regard to the reviewing stage of writing, unskilled writers usually limit themselves on local revision such as spelling errors or grammar mistakes, whereas skilled writers will give added attention to global revision, which deals with the logic, coherence and rhetoric of an entire article. The subjects of this study, who are EFL skilled writers, reported that they checked their written works for spelling and grammar

errors when the texts were done. And all of them went on to report that they then spent most of the post-writing time on thinking over whether their writing was logic and coherent for the readers to follow and what else could be done to make their written texts more powerful or persuasive.

Two examples are given below to illustrate how skilled writers review, evaluate, and revise their written works.

(14)

130S: Sometimes I will probably make only a few changes at the moment when the draft is first done. But perhaps a few days later, the original ideas may be changed or some other new ideas may occur to me. So I will then begin to think over maybe a paragraph can be deleted, or makes some revisions to the paragraph to make it better.

132S: When I start to review the draft, I will check the grammar and spelling first, you know, the basic mistakes. And then I will check the entire article in terms of logic, I mean, to check whether the flow of thoughts is logical or not.

(15)

240S: When I am reviewing and revising, I will check spelling and grammar first. And when I review the article for the second time, I will pay particular attention to its logic.

244S: . . . I will see whether I can write the sentences more precisely or make the expressions more powerful.

250S: . . . that is, throughout the entire article, whether all the ideas are all related to each other, and whether they form a piece of coherent text.

256S: [when a paragraph is found incoherent,] it will be deleted or the entire paragraph will be revised.

258S: I make sure that the entire article must have a main idea.

In the first example, the subject reported that, if the time was allowed, major revisions were usually done a few days after she had completed the first draft, and she would review the draft for several times before she turned in the assignment to the instructor. In fact, the other eight subjects reported the similar reviewing and revising processes. When being further queried about why they preferred to put the drafts aside for a while, they replied that the time would help to create the distance between writers and their written works, and so the strategy would help to find the errors in written texts, especially the flaws in logic and coherence. The skilled writers also used this strategy when they ran out of ideas during writing. This finding is important in that it will be impossible to observe this strategy if the "think-aloud" method is adopted, in which subjects are usually required to finish the task within a couple of hours.

Another major finding is related to the declarative knowledge of *coherence and continuity* discussed in the previous section. As reported earlier, all the subjects are found to possess this declarative knowledge. From the above examples we can further find that they were not only aware of the importance of coherence and continuity, but actually fulfilled the requirement of coherence when they composed. As shown in the examples, whether each paragraph is coherent with and related to the main topic of an article, whether the cohesion within sentences exists, and whether the argumentation is logical are among the skilled writers' main concerns. Moreover, in order to achieve the requirement of logic and coherence, they might move, add or even delete an entire paragraph. As reported in the literature, this large-scaled revision usually cannot be found in the writing processes of unskilled writers.

To sum up, given the above examples, we have discussed the following strategies for revising. The first is *pause-to-think*, the action of leaving the task aside for a while and returning to it later when one runs out of ideas during writing, or when he or she has completed the task but plan to check it again later. The strategy of *reviewing* refers to the action of going back to read what has been written during writing or a few days later in order to get more ideas to resume writing or to evaluate the written text. The strategy of revision consists of *local revision* and *global revision*. The former refers to the revision that focuses on the errors of spelling, grammar or punctuation found in the written products. The latter is the revision that deals with paragraph development, requirement of coherence, and logical flow of thoughts in the written products.

CONCLUSIONS

The goal of this study is to find out the metacognitive knowledge the skilled writers possess with an attempt to constitute the metacognitive knowledge base EFL students need in order to effectively achieve the purpose of writing, i.e., to communicate with the reader. We have found that the skilled writers in this study indeed possess the metacognitive knowledge and strategies needed to write well. First of all, they undergo recursive writing process; namely, they repeat the three processes of writing, planning, writing and reviewing, whenever it is necessary throughout the entire composing process to ensure that what they write is what they intend to communicate with their readers. In addition, they are metacognitively aware of the declarative knowledge of topic familiarity, self-awareness of strength or weakness, rhetoric conventions, coherence and continuity, audience awareness and many others. Furthermore, they are capable of making good use of their metacognitive procedural knowledge to fulfill the requirements of good writing; the procedural knowledge includes brainstorming, organizing, outlining, pause-to-think, reviewing, local and global revision, etc.

At least two major issues of metacognition that the current study does not approach need further research in the future. This study focuses on analyzing the declarative and procedural knowledge of the skilled writers; the conditional knowledge needs further investigation. We need to know also the answers to the questions *why* a given strategy is adopted and *when* to use one strategy as opposed to another, so we can better understand the cognitive and metacognitive processes one undergoes and the metacognitive activities he or she is engaged in during the cognitive enterprise of writing. In addition, this study deals with only one of the two components of metacognition, i.e., knowledge of cognition; the other component, regulation of cognition, thus needs future studies. When we come to realize how an individual controls his or her learning, instruction can then be designed to assist them to monitor their learning processes and to develop regulatory and compensatory strategies.

After all, writing is a complex cognitive activity, and L2 writing involves even more complicated factors. From the perspective of metacognition, this study, thus, intends to constitute the development target for EFL writing instructors and beginning writers. Baker and Brown (1984) claim that "the more we are able to specify the rules used by expert readers, the more we will be able to successfully instruct the novice" (p. 375). Based upon what we know about the skilled writers' metacognitive knowledge, we hope that EFL instructors can therefore help our students to strengthen their metacognitive models and learn to write well in the target language.

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APPENDIX

(1)

225T: 那你寫的過程中，如果說你寫了一半了停下來，停頓了，不知道怎麼繼續的時候，你會怎麼辦？

226S: 怎麼辦？我可能就可能會換個方向來寫。

...

239T: 那如果說你不需要坐在這邊寫，比如說交作業，可能一個禮拜後交，那你寫一半寫不出來，你會怎麼辦呢？

240S: 我就不會再寫，就等到隔天或後天再寫這樣子。

241T: 你覺得這有什麼好處？

242S: 我覺得這樣子會可以把你原來很亂的想法，然後先不要想它，然後過一段時間之後，可能會有新的更好的想法這樣子。

243T: 嗯哼！

244S: 對！不會一直專注在一個idea上面。

245T: 那比如說你現在寫到一半，然後停下來，然後再想要繼續的時候，你通常會做什麼事？

246S: 就是在紙上先寫一下，很多很多很雜的都把它寫起來，然後看到很多都寫完了之後，就會挑幾個出來寫，我認爲，覺得比較好寫的出來寫這樣子。

(2)

82S: ...題目好寫的話，當然我的內容可以稍微多一點；題目難寫的話，我就是，少一點...

...

96S: ...其實最主要的就是，我要看我所得知的資料多不多；如果資料多的話，我大概就會ta、ta、ta好幾段寫出來，資料少的話，就是濃縮在，原則，兩段。

(3)

62S: ...我的優點就是結構很強，缺點就是單字懂太少...

...

66S: ...之後在寫的時候就會變成說，我會比較focus在我的結構性，因爲我知道我自己有一些方面比人家差，所以我就會利用這種結構性，那種清楚的表達方式，讓人家看得出來我在講什麼...

(4)

116S: 就是introduction，就是先給讀者一個開頭，讓他們導入正文，然後在開頭的時候，最後面的時候可以放一個thesis statement，就是告訴讀者說以下我的正文討論到三個重點。那三個重點可能就一二三這樣重點，那接下來的一段可能就開始討論第一個重點，那第一個重點可能又從一個比較簡單，從topic sentence開始，那topic sentence裡面可能又可以有三個examples，來告訴讀者這樣的一個觀念...

(5)
70S: ...因爲寫文章是要連貫性的，不能說一個段落、一個段落這樣分散，最好是有關連

(6)
38S: ...你就是整個文章讓人家讀起來，就是你從頭到尾都有相關；然後你看起來就是，大概你就知道它完整的一個文章就是在講那個是什麼

(7)
343S: ...[coherence]就是跟main idea有很大的關係，那然後就是看你怎麼怎麼把你整篇的文章都能夠很有系統的，都是一直在說你的main idea，而不會跑到別的地方去這樣子

(8)
144S: 這樣講人家看得懂嗎？可以知道我的意思嗎？

(9)
226S: 通順的目的是要讓對方好讀，而且他很快就可以知道我要表達什麼...

(10)
86S: ...每一句話跟每一句話之間一定要有，就是要能夠很，就是要很流暢，就人家看得懂，啊自己看得懂別人不一定看得懂

(11)
96S: 會先就想一下有關這題目的所有資訊，就我所知道的所有資訊，然後大概會安排一下說整個的order，可能就調換一下，可能從從什麼先寫，什麼後寫這樣子，然後可能再來就是想老師教過的結構，就是introduction，thesis statement，再來是brief connection，再來就是conclusion這樣子

(12)
106S: [有關那個主題自己知道的一些基本東西]如果是那種很短的，就用想的；如果是那種很長的，就會寫下來

110S: [我就知道我可能]第一段要寫什麼，第二段要寫什麼

(13)
50S: 第一段我其實在寫的時候，我會想說要怎麼開頭，...
52S: 然後開頭想完了以後就，我想了一個開頭大概以後，我就開始把每一段大概我要寫的主題，我想一大概想一下，然後就照著那個步驟這樣
54S: 每一段大概要寫什麼，然後順序安排一下，然後再動筆這樣

(14)
130S: 有時候可能是當下修改不會很多，可是可能過幾天後，可能那種idea變了之後，又會想把它加新的進去，然後我就會開始想哪一段可以刪，或者是哪一邊再做一點修正會更好這樣子
132S: 剛開始可能會先看文法，那種spelling最基本的錯誤，然後再來是看那個邏輯吧，整個合不合邏輯這樣子

(15)
240S: 再回去改的時候，...我會先check那一些單字啊...那文法我大概會check過這樣子，可是我在下一次的時候，我就會特別看合不合邏輯
244S: ...有一些寫法是不是說可以更精簡，或者是說更powerful ...
250S: ...就是整個文章這樣子下來，你的觀念是不是很符合，上下是不是很一貫
256S: [如果覺得某段不順]我可能會把一段去掉，或整段重寫
258S: 一定要讓它整篇是有共同的中心...